Machine status – December 28

- Machine status - overview
- Blue ring: ramp development
- Yellow ring: obstruction
- Beginning 2 weeks start-up

Machine status - overview

Yellow ring

✓ At operating temperature

✓ PS high-current tests and shut-off done yesterday

Beam activity during owl shift today→obstruction (more later)

Blue ring

✓ almost re-commissioned for physics
(highlights and yet-to-do's later)

Injectors

longitudinal emittance

re-establish high intensity (Tandem source change yesterday
Tandem, Booster and AGS tuning)

Blue ring – set-up with beam

Established ramp with 90%+ transmission

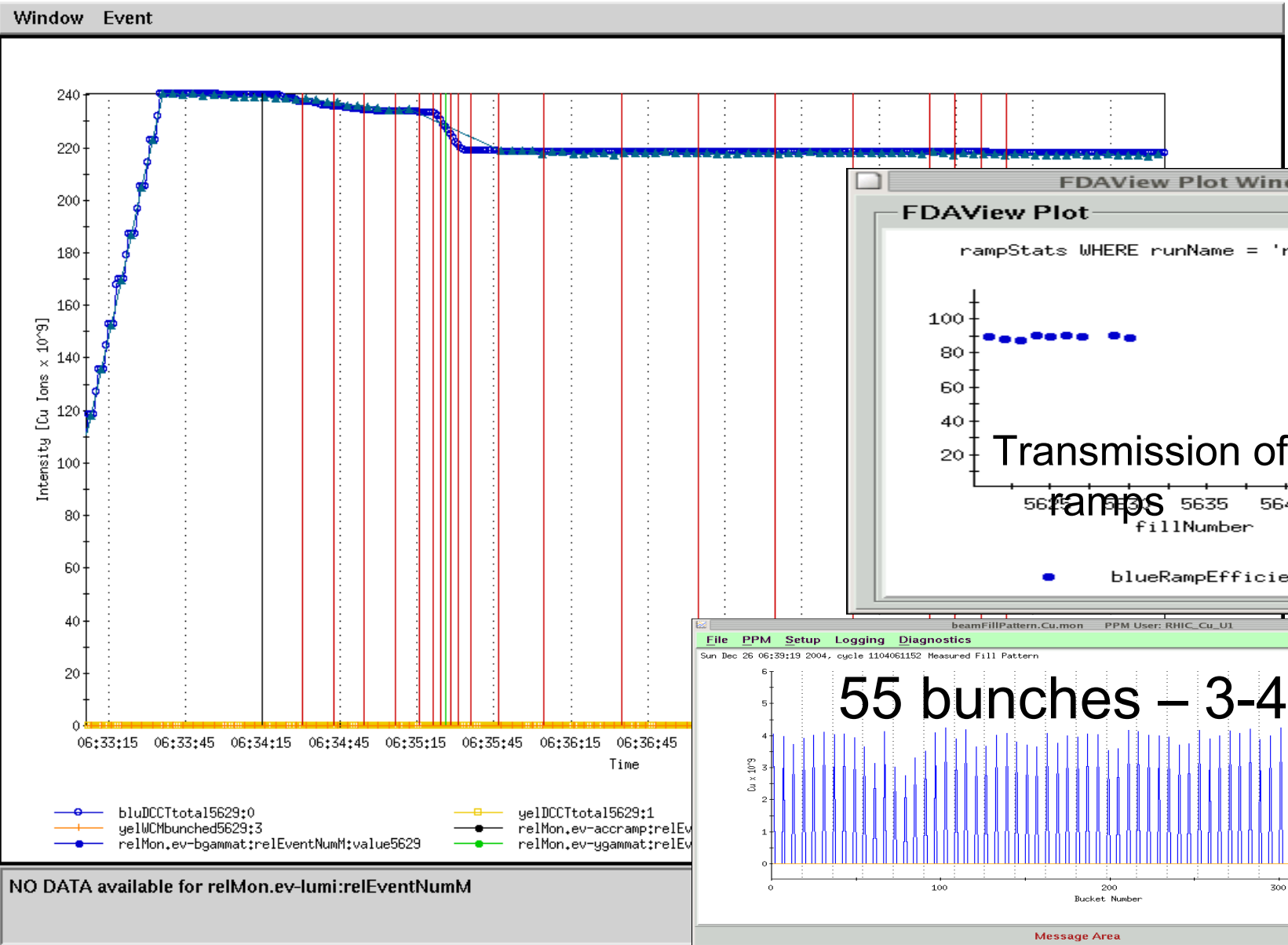
key issues

- transition and early stone tuning (orbit, chromaticity)
- coupling control at beta* squeeze
- permit pulls: Artus re-configuring, adjusting slow loss thresholds

Increased intensity up to ~4e9/bunch and #bunches (ramped 14, 28, 45, 55 bunch patterns, 68 at injection)

(tolerable) pressure rise at bi8, bi12, bo2

Blue ramp



Transmission of ramps

55 bunches – 3-4e9

Blue – yet to do

- High bunch intensity development (>4e9/bunch)

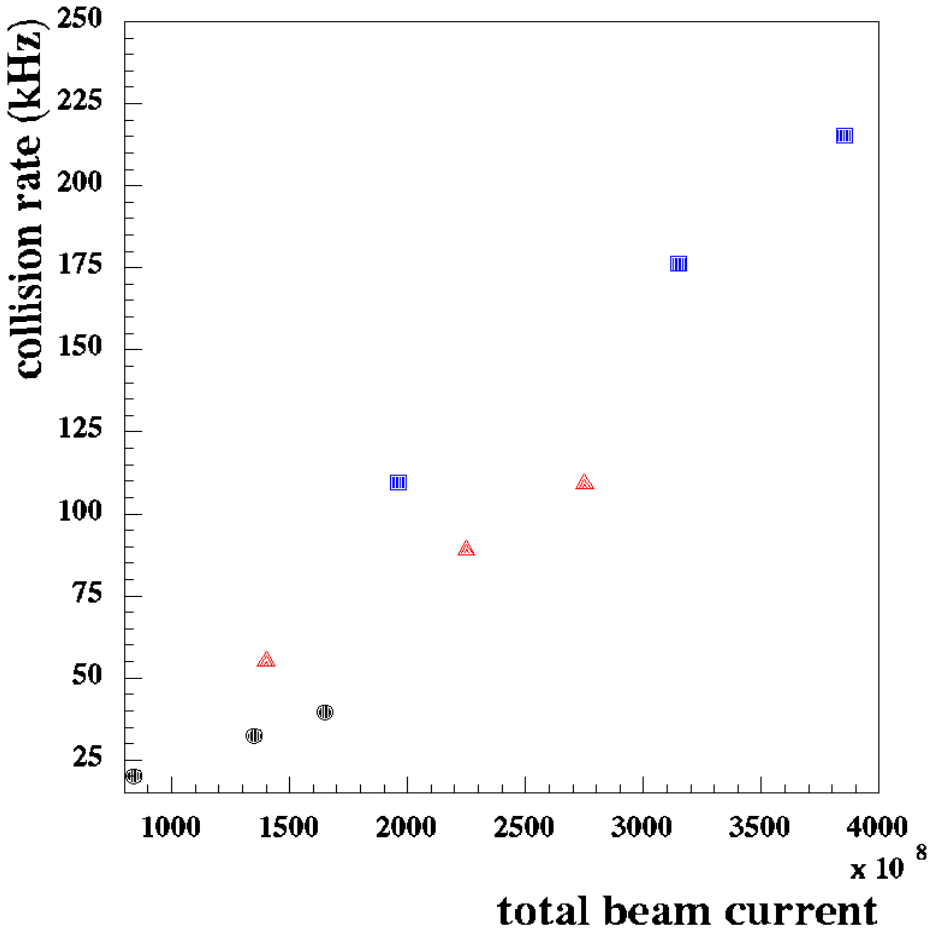
  with interlock on low intensity bunches
- Re-bucketing (RF prep work done)
- Dispersion in IR8 (2m+)
- AC dipole, optics measurements

Operating scenarios

Evaluate **collision** and **event** rates for possible operating scenarios:

Number of bunches

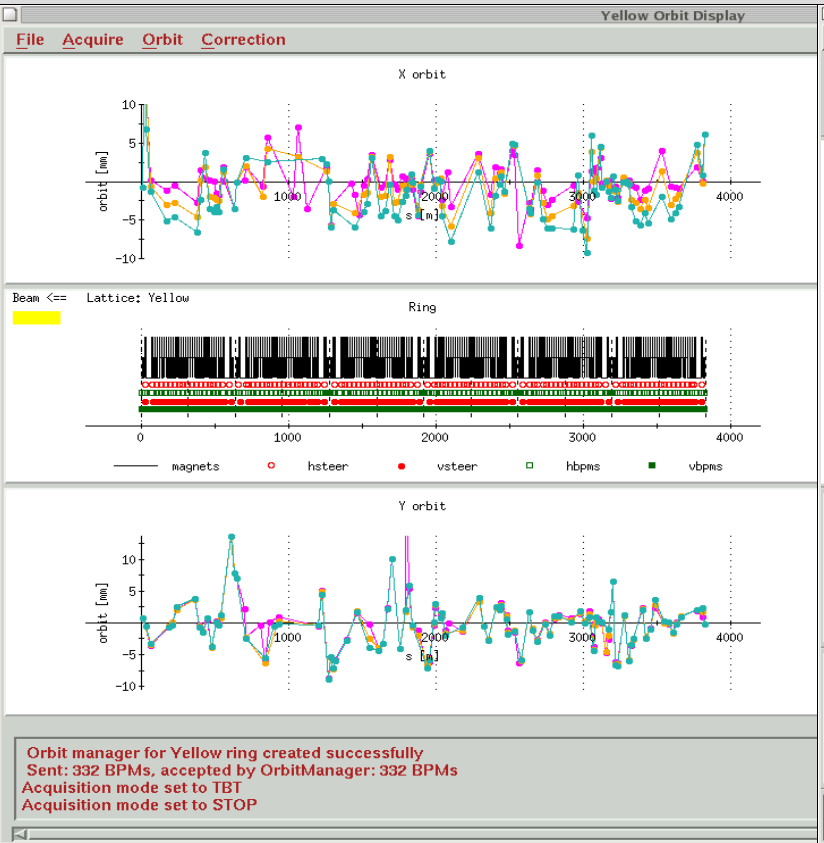
Bunch intensity	28	45	55
3e9	84	135	165
5e9	140	225	275
7e9	196	315	385

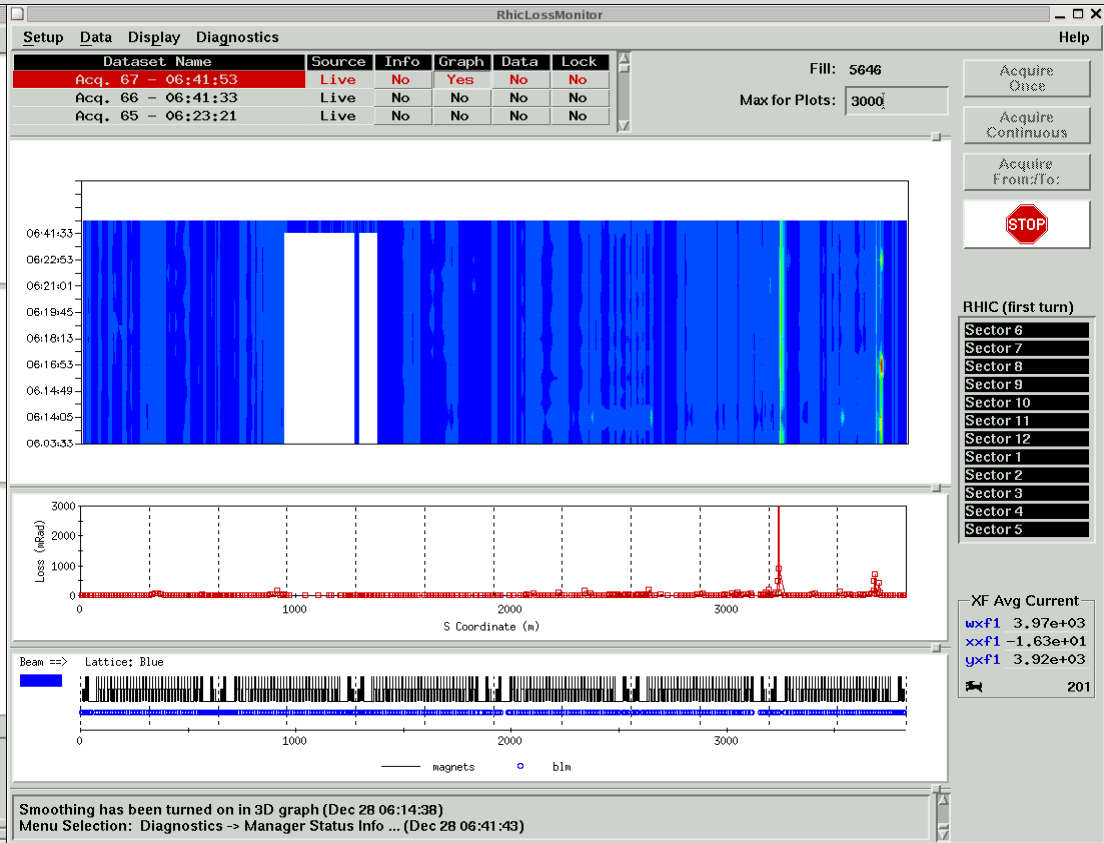


Phobos pressure rise?

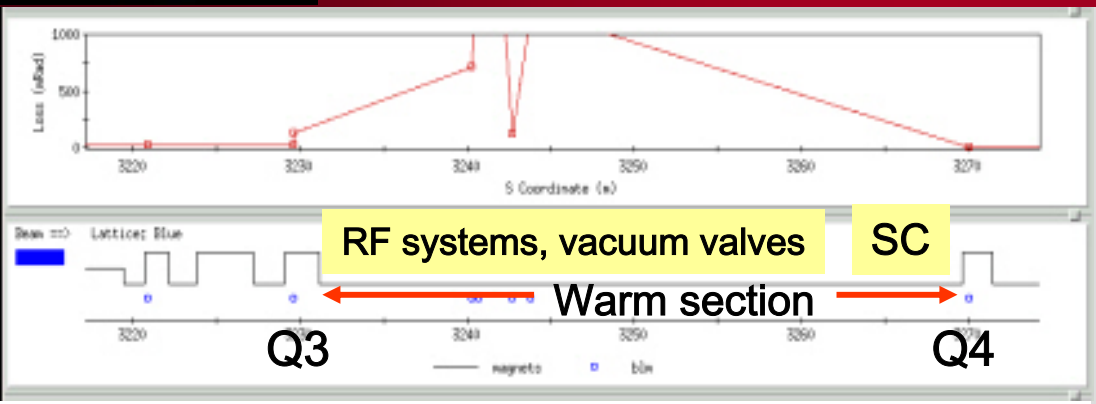
Yellow obstruction

1. The losses monitor signals go away without beam.
2. Largest loss is at s=3240m (rf region), second largest loss is at s=3690m.
3. Vacuum valves in rf region where all moved and behaved as expected.
4. We see an energy loss. After every 40 turns we move the beam by about 2mm at locations with D=1.8m.
5. An aperture scan at s=3240m did not change the loss pattern.
6. A vertical orbit bump of -4mm at s=3690m cut the losses in half (they are still about 1000mRad)





Yellow obstruction – cont'



Radiation survey

New BLM's

Comparison with nov28 data

Check new BLM's, BPMs at SC

→confirm cause

(SC kicker? Valve? Bellow?)

→fix it

Radiation survey →

Q3	
Vac Val	20 urad
SC tank beginning	0
SC tank middle	100
SC tank end	200
SC tank just outside	250
along visible part of orange solinoid	200
at LM by solinoid	500
along covered part of solinoid	200
entrance to Landau Cavity	500
exit of Landau Cavity	400
Vac Valve	300
Along Storage Cavities	200
Exit of Storage Cavities	150
Vac Valve	300
along Acceleration Cavities	0
entrance to Vac Valve 3.1	100
exit of Vac Valve by Q3	150

Plan of the Day Tuesday, December 28, 2004

Day: Wolfram/Ubaldo Eve: Todd Owl: Vadim

Access for diagnosis of yellow obstruction (estimate 2-3 h)

- radiation survey (HP, vacuum)
- install new BLMs in the sector 4 warm section (Q3,Q4) (Mei, Curcio)
- compare yellow beam data eve nov 28 (Wolfram, Ubaldo, Todd.....)
- Tandem tuning
- Power supply yellow ramps (George, Carl)
- Pin diodes
- Ac dipole

Yellow Beam:

- AtR and injection tuning (injection kickers, injection dampers)
- **check BPMs in 1004** - stochastic cooling tank (MikeB)
- establish circulating beam, lifetime
- **RF capture**, longitudinal matching, revtick
- check centering of mean orbit (arcs) ; (bend trim in Run-4 was +0.00002)
- **Instrumentation set-up:** BPMs, BLMs, WCM, Artus, PLL, IPM, Schottky, Coherence, E-detectors
- Optimize injection (orbit, tunes, coupling, chromaticity, measure emittance)
- *Ramp instrumentation set-up*
- *Start ramping development*

Blue beam (if yellow not viable):

- rebucketing (MikeB, RF)
- high bunch intensity development (>4e9/bunch)
- increase progressively number of bunches - with low intensity interlock active
- investigate dispersion problem at IR8
- AC dipole, optics measurements